

be stretched, and the barrel moved out of place. We have therefore provided an automatic lock for the heads, which can only be thrown out at a certain portion of the return-stroke of the hoop-drivers.

On the lower tie-rod, B, we secure sleeves M, to which are pivoted levers N, each having two arms, n , as shown in the perspective view, Fig. 6, these arms bearing normally against extensions C' of the heads C. Arms n' of the levers N are connected to rods P, which pass through bearings Q, bolted to the tie-rod B, and also through bearings R, bolted to the hoop-driving heads D. On the rods P are stiff springs S, which bear against yokes p on the rods, while the opposite ends of the springs are in contact with the stationary bearings Q, so that the springs will at all times tend to keep the arms n of the levers N in the position shown in Fig. 1. Each rod P has an offset or catch, q , and is tapered at its outer end, h , which is adapted to ride upon an inclined plane, K, secured to a bracket, b^2 , bolted to the rod B.

The heads C C are drawn back in precisely the same manner as described in the aforesaid application, a guided rod, a' , being pivoted to each head and passing through an orifice in the head D, and each rod is notched at a'' to engage with a projection on the head when the latter is advanced.

The end of each rod is tapered, and when the head D on its retraction draws the rod back to a certain point the tapered portion of the rod comes in contact with a shoe, b' , on the bracket b^2 and is lifted thereby, thus releasing the head C and allowing it to swing by gravity back into its normal position. Previous to the engagement of the head D with the notch a' , however, the bearing R, engaged with the notch q on the rod P, so that draft was imparted to said rod and to the arm n' of the lever N, the arm n of the latter being thus swung down clear of the head C before the rod a' is operated upon to withdraw said head C, and as soon as the head D has traveled so far rearward as to effect a partial retraction of the head C the end of the bar P is lifted by the inclined plane K, so that said bar is released from the bearing R, thus permitting the spring S to act on the lever N and swing the arm n of the same up into position to engage with the head C as soon as the latter is released from the control of the head D and swung back into its normal position, a sleeve, b , on the tie-rod B preventing undue forward movement of the head.

Adapted to the lower tie-rod, B, is a cradle, W, Figs. 2 and 5, formed of two levers, w , tied together by rods w' . The long arms of these levers we prefer to curve somewhat in the shape of the barrel. One of the levers w is connected to a treadle, Y, by a link, y , so that when the barrel has been set up and hooped, and previous to the withdrawal of the stave-receiving heads, the cradle may be moved to the position shown by dotted lines in Fig.

2, the attendant pressing his foot upon the treadle to effect this movement. As the barrel falls, therefore, the shipper held in this position will guide the barrel in the proper direction—that is, outward in front of the machine.

Each of the hoop-drivers is provided with a supplemental driver, v , pivoted at v' to the main driver V, and provided with a spring, v^2 , which is secured to the driver V and bears against the supplemental driver, tending to force it down against the staves when it is driving a hoop into place.

By this construction two hoops can be driven on each end of the barrel simultaneously. The two hoops are placed upon the heads C C previous to the feeding of the staves into the machine. When enough staves for a barrel have been fed into the machine, the bilge-hoops are drawn from the heads C onto the ends of the barrel by hand, so that when the hoop-drivers are fed toward the barrel the drivers v act first on the bilge-hoops, and when the latter are fairly started the drivers V commence to force on the other hoops. When both hoops have been forced on sufficiently, the movement of the drivers is reversed and they are retracted to their normal positions.

We claim as our invention—

1. The combination of the stave-receiving head having an annular groove into which the staves are fed, with an anti-friction surface forming the base of the groove and providing a bearing for the ends of the staves, all substantially as described.

2. The combination of the stave-receiving head having a stave-receiving groove, with a ring free to turn therein and against which the ends of the staves bear while they are being fed around the heads of the barrel, all substantially as specified.

3. The combination of the stave-receiving head having an annular groove, a ring therein, and anti-friction rollers at the rear of said ring, all substantially as and for the purpose set forth.

4. The combination of the stave-receiving head having an annular groove therein, a bearing-ring for the ends of the staves, anti-friction rollers forming a backing for said ring, and rollers forming an internal peripheral bearing for the ring, all substantially as specified.

5. The combination of the stave-receiving head having an annular groove, the bearing-ring therein, and a ring overlapping said bearing-ring and adapted to hold it in place in the groove, substantially as described.

6. The combination, in a barrel-setting-up machine, of a stave-receiving head, a hoop-driving head, a lever bearing upon the stave-receiving head and serving to lock the same in operative position, and a rod or bar connected to said locking-lever and acted upon by the hoop-driving head on its rearward movement, substantially as described.

7. The combination of a stave-receiving